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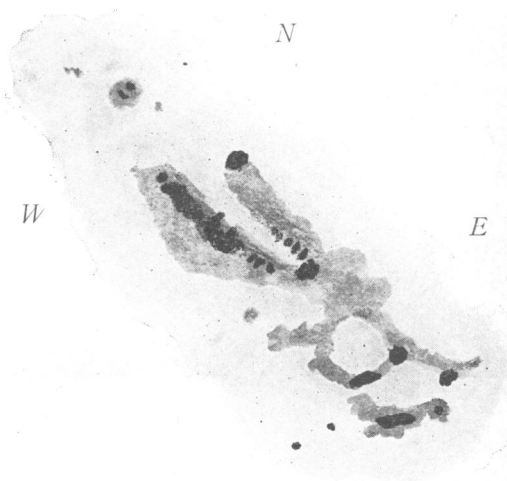
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THE GREAT SUNSPOT OF OCTOBER, 1903.

BY ROSE O'HALLORAN.

The recent sunspot cycle has been of unusual duration, though, according to data revised by Professor A. WOLFER, not beyond the limit of variations previously noted. Twelve and a half years elapsed between the extreme of the minimum, in the winter of 1890 and that of September, 1902, when it became evident to telescopic observers of the solar surface that a slow but steady increase of spottedness had commenced; while the incoming maximum of the summer of 1891 antedates by twelve and one quarter years the corresponding stage so conspicuous in October last. Not since September, 1898, has such an enormous formation discolored the white surface of the Sun.

In a four-inch telescope it was first visible on the morning of October 5th, while the easterly umbra was still in contact with the limb, and the branching penumbra was seen at parallel lines slanting in a northeast direction. A daily record of the condition of the solar surface shows that the tract was unspotted during the preceding rotation.



Large Sunspot, Oct 8, 1903, 9 A. M.
(Screen Image.)

On October 6th seven distinct umbræ were noticeable, which were increased to eleven on the day following, and on the 8th at least sixteen were strewn over the treelike penumbra. Having then emerged from the atmospheric haze of the solar limb, it was clearly visible without magnifying power, and when midway across the disk the main unbroken section measured about 130,000 miles, with an average width of 30,000. The central part extended in south heliographic latitude thirty-five degrees, its slow journey of nearly fourteen days from limb to limb also corresponding with this distance from the solar equator. Changes continued from day to day, and its largest midway phase, on October 11th, was altered in general outline, some nuclei having united, others having divided, while the encircling penumbra was more compact, though still mingled with clear photospheric areas. Then some mighty force gained sway in the region during the night, and when the 12th dawned the vast penumbra was rent crosswise in nearly equal parts. The intervening field of photospheric matter, about 30,000 miles in width, was rhomboidal in form, with remarkably even angles, only one penumbral remnant, like an islet in a channel, surviving



Large Sunspot, Oct. 12, 1903, noon.
(Screen Image.)

the swift symmetrical severance. As the formation advanced in the west quadrant, a decrease in the number of nuclei and a general decline were noticeable, but the wide rift was still apparent until the 16th, when the foremost section had disappeared at the west limb. On the 17th the remaining part was still distinctly seen, and about fifteen degrees in the rear was a new addition, a small faint spot, destined to be conspicuous in the succeeding rotation. On the morning following the large sections had passed from

view. In due time, twenty-seven days from its first appearance, a field of faculæ and a slight irregularity in the contour of the limb was discernible far to the south. This was on the 1st of November, 10:30 A.M. At noon the penumbra was visible, and at 4 P.M. the foremost umbra as a faint dark line. As the two sections advanced, they were seen to be much decreased in size and changed in form, but several degrees in the rear was a large scattered group, probably a development from the small spot above mentioned. When central in the southerly zones, this addition was about 70,000 miles in length, and made the group again visible to the unaided eye on clear days. Even more distinct was a conspicuous group with large umbræ in north latitude 15° that had appeared on the east limb on the 29th of October, while near the southwest limb was a rather large group that had come in on the 25th of the same month.

Though larger spots have been seen than any one of these three, the extent of spotted area at one time has not been equaled since 1894.

PLANETARY PHENOMENA FOR JANUARY AND FEBRUARY, 1904.

BY MALCOLM McNEILL.

PHASES OF THE MOON, PACIFIC TIME.

Full Moon, Jan. 2, 9 ^h 47 ^m P.M.	Full Moon, Feb. 1, 8 ^h 33 ^m A.M.
Last Quarter, " 9, 1 10 P.M.	Last Quarter, " 8, 1 56 A.M.
New Moon, " 17, 7 47 A.M.	New Moon, " 16, 3 5 A.M.
First Quarter, " 25, 12 41 P.M.	First Quarter, " 24, 3 9 A.M.

The year 1904 is a leap-year, the first since 1896, and the regular succession of leap-years every fourth year will not be interrupted until the year 2100.

The Earth is in perihelion January 2d, 8 P.M., Pacific time.

Mercury is an evening star at the beginning of January, having reached its greatest east elongation, $19^{\circ} 30'$, just before midnight on December 31st. The elongation is not a very large one, as the planet passes perihelion only a few days later, on January 10th, but it remains above the horizon for an hour and